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SCIENCE

A WEEKLY JOURNAL DEVOTED TO THE ADVANCEMENT OF SCIENCE, PUBLISHING THE
OFFICIAL NOTICES AND PROCEEDINGS OF THE AMERICAN ASSOCIATION
FOR THE ADVANCEMENT OF SCIENCE.

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FRIDAY, JANUARY 23, 1903.

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THE UNIVERSE AS AN ORGANISM.*

If I were called upon to convey, within the compass of a single sentence, an idea of the trend of recent astronomical and physical science, I should say that it was in the direction of showing the universe to be a connected whole. The farther we advance in knowledge, the clearer it becomes that the bodies which are scattered through the celestial spaces are not completely independent existences, but have, with all their infinite diversity, many attributes in common.

In this we are going in the direction of certain ideas of the ancients which modern discovery long seemed to have contradicted. In the infancy of the race, the idea that the heavens were simply an enlarged and diversified earth, peopled by beings who could roam at pleasure from one extreme to the other, was a quite natural one. The crystalline sphere or spheres which contained all formed a combination of machinery revolving on a single plan. But all bonds of unity between the stars began to be weakened when Copernicus showed that there were no spheres, that the planets were isolated bodies, and that the stars were vastly more distant than the planets. As discovery went on and our conceptions of the universe were

MSS. intended for publication and books, etc., intended for review should be sent to the responsible editor, Professor J. McKeen Cattell, Garrison-on-Hudson, N. Y.

* Address before the Astronomical and Astrophysical Society of America, December 29, 1902.

Atome; p. 113, for present, prevent (the passage from Bentham in which this mistake occurs was evidently taken from Eisler's 'Wörterbuch,' where the same mistake is made); p. 126, for Preyer, Preger; p. 143, for Appendix B, Appendix II.; p. 194, for Fonsgrève, Fonsegrive; p. 269, for Kirchener, Kirchner; p. 270, for 1894, 1874; p. 273, for Appuleius, Apuleius; p. 292, for Herbert, Herbart; p. 456, for fühlen, Fühlen; p. 500, for Natur und Grenzen der Naturwissenschaft, Über die Grenzen des Naturerkenntnis; p. 533, for Gibert, Gilbert; p. 601, for Pufendorf, Pufendorf; p. 668, for stata, states; p. 823, for Nietsche, Nietzsche. The reference on page 421 to Müller's translation of the 'Kritik' (p. 320-326) should, I suppose, be to pages 300 ff.

The Greek, Latin, German, French and Italian indices which are found at the end of the second volume are useful.

FRANK THILLY.

UNIVERSITY OF MISSOURI.

SCIENTIFIC JOURNALS AND ARTICLES.

The Popular Science Monthly for January contains an excellent account of 'The Missouri Botanical Garden,' by William Trelease, telling of its origin, arrangement and plans for future growth. Alfred C. Haddon makes a plea for 'The Saving of Vanishing Data,' mainly zoological, and A. J. McLaughlin combats 'America's Distrust of the Immigrant' with the aid of various tables showing his various deficiencies. 'Variation in Man and Woman,' by Havelock Ellis, is largely a reply to former criticism by Professor Pearson and tends to show that variation is greatest in man. J. C. Sutherland considers 'The Engineering Mind,' and A. L. Benedict makes a plea for 'Post-graduate Degrees in Absentia.' Frederick Adams Woods presents the sixth of his papers on 'Mental and Moral Heredity in Royalty,' the present being devoted to the Bourbons in Spain, and W. J. Spillman discusses 'Mendel's Law.'

In *The American Naturalist* for December A. W. Grabau presents some 'Studies of Gastropoda' and W. M. Wheeler describes 'The Occurrence of *Formica cinerea* Mayr and

Formica rudibarbis Fabricius in America.' The twelfth part of 'Synopsis of North American Invertebrates' is by H. S. Pratt, and continues the treatment of the Trematodes, embracing the digenetic forms. This is a long and fully illustrated paper. The number contains the index to Volume XXXVI.

The American Museum Journal for January gives notes on the second Cope collection of fossil vertebrates, on the Eskimo collection from Hudson Bay and on the skeleton of the finback whale recently acquired by the museum. The supplement is a substantial 'leaflet' of thirty pages, fully illustrated, devoted to an account, by W. D. Matthew, of the 'Evolution of the Horse.' This pamphlet should be in demand, as it summarizes our knowledge of this subject in a most admirable manner and brings it down to date.

THE leading article of *The Museums Journal* of Great Britain for December is on 'Technical Museums,' by John MacLauchlan, and is a sketch of the technical museum of Dundee, showing how its collections were brought together at comparatively little cost. Not every museum, however, is so favorably located for acquiring material. The bulk of the number is occupied by reviews of museum reports and with notes. From these last we learn that the collections made by Sven Hedin are now in the Stockholm university college, where they are being arranged and studied.

F. A. LUCAS.

SOCIETIES AND ACADEMIES.

OHIO STATE ACADEMY OF SCIENCE.

THE twelfth annual meeting was held at Columbus, November 28 and 29, with about thirty-five members in attendance. The committee on topographic survey reported that the legislature had granted \$50,000 to continue the work in cooperation with the United States Geological Survey in 1902 and 1903. Lynds Jones, of Oberlin, gave an account of work done with aid from the Emerson McMillin research fund to secure data for a catalogue of the birds of Ohio to be published by the Academy. C. Judson Herrick was elected president for the ensuing year; J. A. Bownocker and Miss L. C. Riddle, vice-presi-